SCIENTIFIC AMERICAN.

THE ADVOCATE OF INDUSTRY AND ENTERPRISE, AND JOURNAL OF MECHANICAL AND OTHER IMPROVEMENTS.

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THE

SCIENTIFIC AMERICAN,

PUBLISHED EVERY THURSDAY MORNING, AT NO. 11 SPRUCE STREET, NEW YORK, NO. 16 STATE STREET, BOSTON, AND NO. 21 ARCADE, PHILADELPHIA,

(THE PRINCIPAL OFFICE BEING IN NEW YORK,)

By RUFUS PORTER.

Each number will be furnished with from two to five original engravings, many of them elegant, and illustrative of *New Inventions*, *Scientific Principles*, and *Curious Works;* and will contain, in addition to the most interesting news of passing events, general notices of the progress of Mechanical and other *Scientific Improvements;* American and Foreign Improvements and Inventions; Catalogues of American Patents; Scientific Essays, illustrative of the principles of the sciences of Mechanics, Chemistry and Architecture; useful information and instruction in various Arts and Trades; Curious Philosophical Experiments; Miscellaneous Intelligence, Music and Poetry.

This paper is especially entitled to the patronage of Mechanics and Manufacturers, being the only paper in America devoted to the interests of those classes; but is particularly useful to farmers, as it will not only apprise them of improvements in agricultural implements, but instruct them in various mechanical trades, and guard them against impositions. As a family newspaper, it will convey more useful intelligence to children and young people, than five times its cost in school instruction. Another important argument in favour of this paper, is, that it will be worth two dollars at the end of the year when the volume is complete, and will probably command that price in cash, if we may judge from the circumstance that old volumes of the New York Mechanic, by the same editor, will now command double the original cost.

TERMS.—The "Scientific American" will be furnished to subscribers at $2,00 per annum,—one dollar in advance, and the balance in six months.

Five copies will be sent to one address six months, for four dollars in advance.

Any person procuring two or more subscriers, will be entitled to a commission of 25 cents each.

Never Give Up!

BY MARTIN FARQUHAR TUPPER.

Never give up! its wiser and better
Always to hope than once to despair:
Fling off the load of Doubt's cankering fetter,
And break the dark spell of tyrannical care:
Never give up! or the burthen may sink you—
Providence kindly has mingled the cup,
And in all trials or troubles, bethink you,
The watchword of life must be, Never give up!

Never give up! there are chances and changes
Helping the hopeful a hundred to one,
And, through the chaos, High Wisdom arranges
Every success—if you'll only hope on:
Never give up! for the wisest, is boldest,
Knowing that Providence mingles the cup,
And of all maxims the best as the oldest,
Is the true watchword of Never give up.

Never give up! though the grape shot may rattle,
Or the full thunder cloud over you burst,
Stand like a rock, and the storm or the battle
Little shall harm you though doing their worst:
Never give up! if adversity presses
Providence wisely has mingled the cup,
And the best counsel, in all your distresses,
Is the stout watchword of Never give up.

Nature's Nobleman.

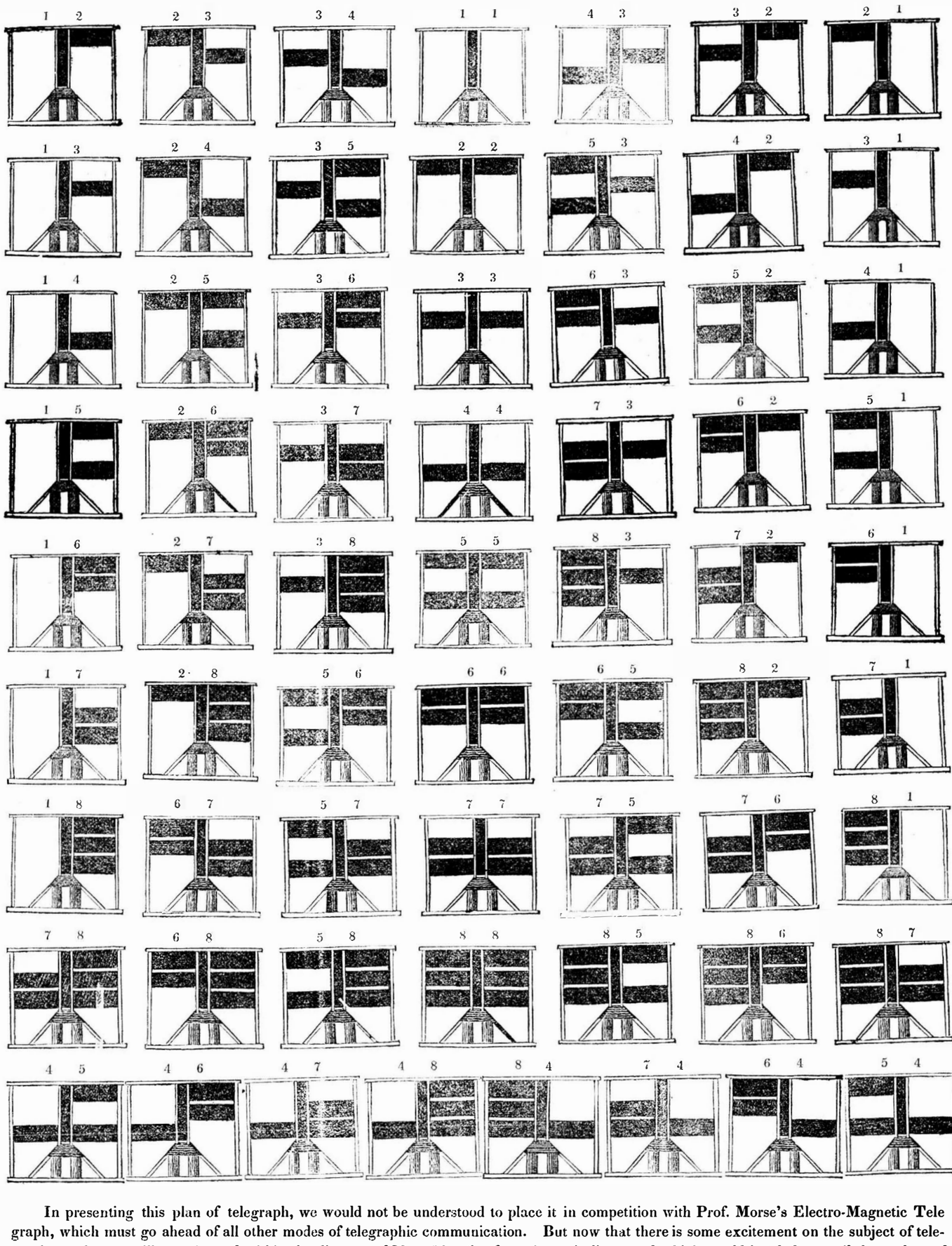
Away with false fashion, so calm and so chill,
Where pleasure itself cannot please,
Away with cold breeding, that faithlessly still,
Affects to be quite at its ease;
For the deepest in feeling is highest in rank,
The freest is first in the band,
And nature's own nobleman, friendly and frank,
Is a man with his heart in his hand.

Fearless in honesty, gentle yet just,
He warmly can love and can hate,
Nor will he bow down with his face in the dust
To Fashion's intolerant state;
For best in good breeding, and highest in rank,
Though lowly or poor in the land,
Is nature's own nobleman, friendly and frank,
The man with his heart in his hand.

His fashion is passion, sincere and intense,
His impulses simple and true,
Yet tempered by judgment, and taught by good sense;
And cordial with me, and with you:
For the finest in manners, as highest in rank,
It is *you*! man! or *you*, man! who stand
Nature's own nobleman, friendly and frank,
A man with his heart in his hand!

This is the best world that we live in,
To spend, or to lend, or to give in!
But to borrow, or beg, or to get a man's own,
By Jove, 'tis the worst world that ever was known.

THE CONSPICUOUS TELEGRAPH.



In presenting this plan of telegraph, we would not be understood to place it in competition with Prof. Morse's Electro-Magnetic Telegraph, which must go ahead of all other modes of telegraphic communication. But now that there is some excitement on the subject of telegraphs, and many villages situated within the distance of 20 or 30 miles from the main lines, and which would be glad to avail themselves of the advantages of early intelligence, but without much expense of capital, this plan is proposed as a convenient substitute. The communication by this plan is nearly as rapid as that by the magnetic, or about fifty alphabetic letters per minute; and the cost of constructing and putting in operation a line on this plan will not exceed five dollars per mile, whereas the other costs about $250 per mile. In the above scale, we have presented the various changes of the signals, and shall proceed to give an explanation of them: but the specification of the peculiar construction and mode of managing this telegraph will be deferred for a future number.

EXPLANATION, &c.—It will be perceived that in the above scale of Telegraphic Signals, there are no two figures alike, but all are distinctly diverse, and have different significations. The several positions of each wing are numbered from one to eight; and by means of these combinations the various signals are effected. This scale is arranged in seven classes, the first of which consists of those which are composed of equal numbers, and of course appear the same from either direction. The significations are as follows: 1, 1, Rest: 2, 2, Answer: 3, 3, Repeat: 4, 4, Period: 5, 5, Attention: 6, 6, Resume: 7, 7, Impeded: 8, 8, Close. The second class consists of the combination of 1 and 2 with higher numbers, and denotes the letters of the alphabet, thus: 1, 2, A: 1, 3, B: 1, 4, C: 1, 5, D: 1, 6, E; 1, 7, F: 1, 8, G: 2, 1, H: 3, 1, I: 4, 1, J: 5, 1, K: 6, 1, L: 7, 1, M: 8, 1, N: 2, 3, O: 2, 4, P: 2, 5, Q: 2, 6, R: 2, 7, S: 2, 8, T: 3, 2, U: 4, 2, V: 5, 2, W: 6, 2, X: 7, 2, Y: 8, 2, Z. The third class consists of the combinations of 3 with higher numbers, and denotes the numerical figures thus: 3, 4, **1**: 3, 5, **2**; 3, 6, **3**: 3, 7, **4**: 3, 8, **5**: 4, 3, **6**: 5, 3, **7**: 6, 3, **8**: 7, 3, **9**: 8, 3, **0**. The fourth class consists of the combinations of 4 with higher numbers, and signify eight commercial cities, thus: 4, 5, Portland: 4, 6, Boston: 4, 7, New York: 4, 8, Philadelphia: 8, 4, Baltimore: 7, 4, Washington: 6, 4, Charleston: 5, 4, New Orleans. The fifth class consists of the combinations of 5 with higher numbers, and signify six very frequently used words, thus: 5, 6, Has: 5, 7, Sailed: 5, 8, For: 6, 5, And: 7, 5, Arrived: 8, 5, From. The sixth class consists of the combinations of 6 with higher numbers, and signify four kinds of vessels, thus: 6, 7, Ship: 6, 8, Schooner: 7, 6, Brig: 8, 6, Sloop. The seventh and last class consists of the two combinations of 7 and 8, and signify (7, 8,) abbreviation, and (8, 7,) interrogation. By means of this classification, and regularity, this scale is very easily learned and each signal remembered. It has been ascertained by actual experiment that these telegraphs can be constructed and erected of sufficient size to be seen distinctly 15 miles, and furnished with good glasses, &c., for 50 dollars each.

This telegraph has been proved by actual operation on a small scale, in the presence of many witnesses; and but for the introduction of a superior plan,—the electro-magnetic—would have come into general use. The use of it is offered free, for the present, to any who may be disposed to avail themselves thereof.

CATALOGUE OF AMERICAN PATENTS

ISSUED IN 1844.

CLASS VI—*Steam and Gas Engines, including Boilers and Furnaces therefor, and parts thereof.*

[Continued.]

Mode of supplying air to consume the combustible gases, &c. that escape from the furnaces of steam engines and other boilers—Peter Robinson, Waterloo, N. Y. April 20th.

Rotary steam engine—Abram Pease, Lyons, N. Y. Feb. 12th.

Rotary steam engine—Mathew Fletcher, London, Eng., Nov. 18th.

Mode of exhausting the case of rotary steam engine—Edward Lock, Newport, England, September 11th.

Method of connecting the action of the cut-off valves of steam engine—Barnabas H. Bartol, Coldspring, N. Y., September 20th; antedated March 20th.

Vibrating steam engine—Ebenezer A. Lester, Boston, Mass. Feb. 7th.

CLASS VII.—*Navigation and maritime implements, comprising all vessels for conveyance on water, their construction, rigging, and propulsion, diving dresses, life-preservers, etc.*

Harpoon—Albert Moor, Hampden, Me., March 16th.

Ice-breaker for boats and other vessels—Samuel Nicholson, Boston, Mass., July 16th.

Life-preserver—Adoniram Chandler, New-York, Oct. 3d.

Life-preserver, applicable as buoys, rafts, &c.—Jos. Francis, New-York, assignee of C. Aug. de Laincourt, France; Nov. 10th, 1842, France: May 10th, 1844, U. S. A.

Propelling boats, &c.—oblique paddle propeller—Ralph Burkley, New-York, March 13th.

Propelling canal and other boats—Henry R. Worthington, New-York, Feb. 2d.

Propelling, horizontal paddle wheels—Ephriam Buck, assignee of Peter Lear, Boston. Mass. Feb. 20th.

Improvement in paddle wheels of steamboats, &c.—Richard D. Chatterton, Derby, Eng. Jan. 11th, 1842, England; July 24th, 1844, U. S. A.

Rotary inclined propeller for vessels—Richard F. Loper, Phil. Pa., Feb. 28th.

Submerged propeller—Peter VonSchmidt, Washington, D. C. May 30th.

Coupling the shafts of submerged propeller, for steamboats, &c.—Richard F. Loper, Phil. Pa., Oct. 9th.

Propelling ships—John Ericsson, New-York, Dec. 31st.

Propelling steamboats and other boats—Gabriel H. Moreau, France, Jan. 26th.

Rigging blocks of ships—Stephen Waterman Greenwich, Ct., and Isaac D. Russell, New-York, Jan. 31st.

Forming and rigging the sails of square rigged vessels—Warren C. Choate, Washington, D. C. April 17th.

Mode of calking ships, cellars, &c.—William Bennet, New-York, April 20th.

Method of strengthening the sails of ships and other vessels—Archibald Trail, Great Britain, Feb. 24th, England; Sept 24th, U. S. A.

CLASS VIII.—*Mathematical, Philosophical, and Optical instruments, including Clocks, Chronometers, etc.*

Chronometer escapements—Oramel W. Waste, Pittsford, N. Y. Sept. 24th.

Clock pendulums—Frederic Kesselmeier, Wooster, Ohio, April 10th.

Machine for calculating interest—Jehu Hatfield, Glensfalls, N. Y. May 6th.

Rules or measures for boards, leather, &c. Charles Ross, Piqua, Ohio, May 17th.

CLASS IX—*Civil Engineering and Architecture, comprising works on rail and common roads, Bridges, Canals, Wharves, Docks, Rivers, Dams, and other internal improvements, Buildings, Roofs, &c.*

Truss frames of bridges—Otis W. Pratt, Norwich, Conn., and Caleb Pratt, Boston, Mass. April 4th.

Canal lock-gates, suspending, opening and closing—Henry McCarty, Pittsburg, Pa. March 16th.

Floating dry-dock, to be used in connection with basin—R. Moody and Samuel D. Dakin, New-York, Sept. 17th.

Sliding doors—William T. Forsyth, Philadelphia, Feb. 12th.

Excavating, mode of cutting ditches for laying pipe,—Ezra Cornell, Ithaca, N. Y. Feb. 28th.

Ditching machines—Edwin Owen, Laporte, Ia., Sept. 4th, antedated March 24th.

Excavator or dray for removing mud, &c., in beds in rivers—Dennis Vermillion, Washington D. C. Nov. 9th.

Excavator scoop and dredging machine—Joseph Smith, Mansfield, O., Aug. 24th.

Scrapes for repairing roads, &c—Samuel G. Sutton, Yorkshire, N. Y. May. 30th.

Improvement in connecting cast-iron rail for railroad—James M. Bay, Harrisburg, Pa., April 13th.

Key for fastening the rails of railroad to their chairs—Benjamin Butterfield, Kensington, Pa. Aug. 21st.

Safety switch for railroads—Gustavus A. Nicholls, Reading, Pa., Dec. 19th.

Railroad truck-frames—Davenport & Bridges, assignees of Charles Davenport, Cambridgeport, Mass. Aug. 10th.

Manner of making roofs of houses—John Wolley, Springfield, Mass. March, 26th.

Securing tin plate, &c., on roofs—Peter Naylor, New York, April 25th.

Machine for sweeping streets—Alexander M. Wilson, Rossville, N. Y. Oct. 16th.

Signal Telegraph—Henry J. Rogers, Baltimore, Md., Sept. 27th.

[To be continued.]

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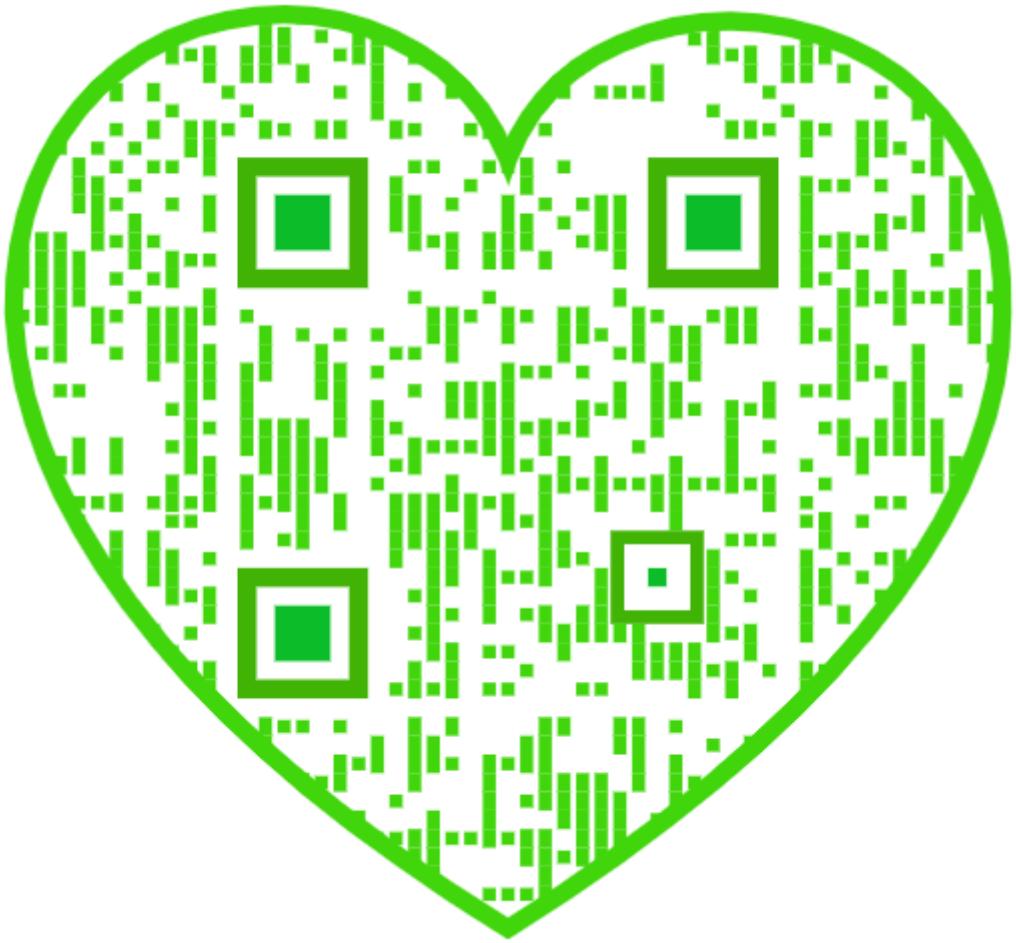
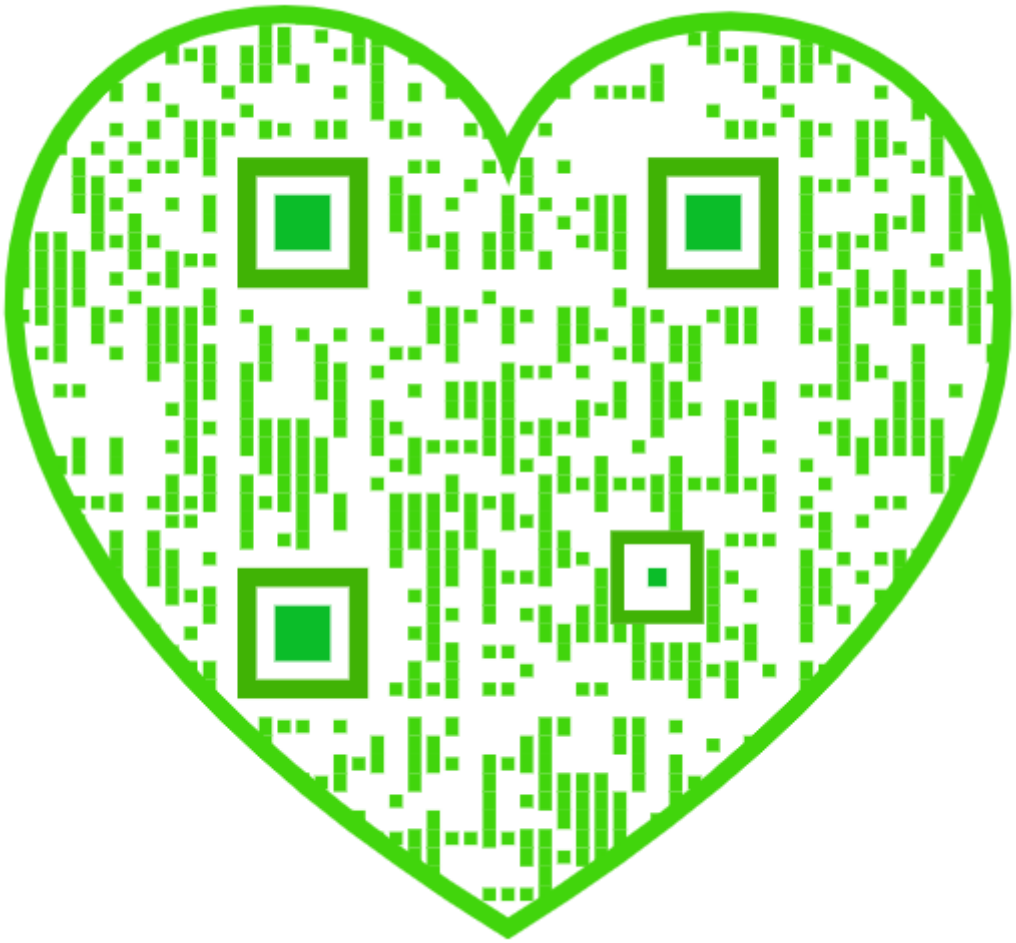




SCIENTIFIC AMERICAN

NEW-YORK, THURSDAY, SEPT. 25.

THE ONE DOLLAR REMITTANCE.—We thank our kind patrons for their promptness: but would remind those few who have received the second number of this paper, but have not yet sent the first dollar according to stipulation, that promptness in this case, is essentially important to us.

SECURE THE FIRST NUMBERS.—We have a few copies of our first number remaining, and those who intend to become subscribers will do well to secure them while they may. There will soon be a pressing demand for them, when too late. We are authorized to offer fifty cents for the first number of the New York Mechanic.

First Principles of Mechanics.

FIGURE 1.

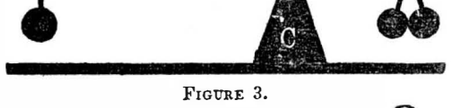
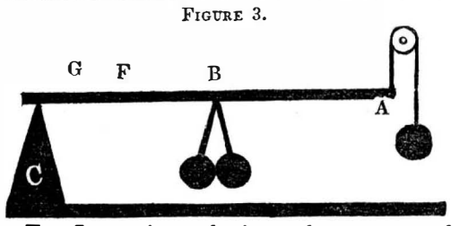


FIGURE 2.

FIGURE 3.



THE LEVER in mechanics, embraces a general principle, by which an increase of force (not power) is obtained by a reduction of motion, or *vice versa;* and that without any actual increase of power. In every modification of the lever, there are necessarily, three several properties, or parts by which it is distinguished; namely, the part to which the force is applied; the part which communicates force to another object; and the fulcrum, by means of which, the force which is received at one point, is discharged at another.—The fulcrum, in whatever form it is applied, is usually stationary, and by its obstinate resistance to motion, occasions a transfer of force from one object to another. The most simple form of the lever is a horizontal bar or plank, with its centre resting on an elevated corner of a stone or other object, as represented in figure 1, of the cut at the head of this column. In this case the plank A. B. is the lever; the stone C is the fulcrum; the ball D by its weight applies a force, which is transferred in the opposite direction to the ball E. In this instance, there is as much force, or pressure applied by the lever to the ball E as is applied by D to the opposite end of the lever. But if the distance from the fulcrum to B is but half as great as that from C to A as represented in figure 2, then the ball suspended from A will counterbalance two equal balls at B. The reason of this is, that, in case of any vertical motion of the lever, the motion of A will be double to that of B. We are now brought to a very convenient opportunity to explain, in a few words, the difference between force and power. Force is mere pressure, without regard to motion; but power, depends on motion and cannot exist without it. In this instance, the two balls at B exert double the force on the lever, that is exerted by the ball A: yet A applies as much power to the lever as does B, if the lever is supposed to be in motion. For if A descends two inches, B is elevated but one inch in consequence; but if B descends one inch, it must be at the expense of elevating A, double the distance, and that in the same time. Thus it is seen that A must travel not only double the distance, but with double the velocity of that of B; and as A excels B in velocity as much as B excels A in weight or force it proves that their powers are equal, nothwithstanding the difference of their weight or forces. We cannot avoid the admission that the same quantity of power is required to raise one lb. weight a distance of eight inches that is required to raise 2 lbs. four inches, or 4 lbs. two inches: nor that it requires double the power to raise a given weight 8 inches, that it does to raise an equal weight 4 inches; but we are nevertheless, reluctant to admit that there can be any definite quantity of power, without some specific velocity. Even admitting, as before stated, that double the quantity of power is required to raise a given weight 8 inches, that is required to raise an equal weight 4 inches, yet there is no specific or limited time in which the work is to be performed, but each process is allowed an infinity of time, we can hardly admit, in this case, a specific quantity of power. To raise or elevate one lb. weight, a specific distance, does require power, we admit; but the quantity of power requisite to do this, unless the time for this performance is limited, is entirely indefinite; for there can be no definite power without a definite velocity. In figure 3, one end of the lever rests on the fulcrum, while the other end is supported by a cord which passes over a pulley to A, nothwithstanding that two balls are suspended from the centre of the lever at B. (In these illustrations, the levers are supposed to be without weight, or light as air.) It will be readily understood that if one lb. weight suspended at A, will support 2 lbs. at B, it would instead of these, support 4 lbs. at F, or 8 at G. In all cases of levers, the influence of the force applied, is in direct proportion to the distance of the point of application, from the axis or fulcrum.

[To be Continued.]

THE WILD MAN OF THE MOUNTAINS.

It has been truly said that scientific knowledge constitutes the principal difference between civilized and barbarous nations. All knowledge of terrestrial things, may be said to be "scientific knowledge," and is the result of observation, reflection, and a virtuous disposition. The aboriginals of America have in general a disposition for reflection, and some of them have acquired a considerable degree of sage wisdom; but having little disposition for industry, whereby to improve the wisdom thus gained, by practical application, the knowledge acquired by one generation confers but little benefit on the next. Yet these people often evince a shrewdness and cunning, hardly to be surpassed by those of their better-informed white neighbours. Col. Freemont, who has recently passed the Rocky Mountains, on an exploring expedition to the Pacific, gives some interesting accounts of the native tribes in that section. One tribe especially is grovelling in the lowest degradation, not even knowing the use of bows and arrows, but live on roots, worms and insects; being less scientific than some of the brute creation. This degradation is the result of sheer indolence. Other tribes ride on horses, have bows, knives and a few muskets; but are thieving and deceitful, while others are honest, friendly and confident. Some of them are expert in hunting, and will manage to take the most fleet and timid animals. The chamois and antelopes of the west, resort to the mountains for security, seeking safety in the highest parts in which they can find sustenance, not dreaming of danger from above, but keeping a sharp look-out towards the plains below. Even our most expert hunters find it difficult to approach near enough to reach them with their rifle-balls. Yet the more crafty Indian, taking advantage of these cautious animals, continues to climb unperceived up the opposite side of the mountain, and gains an eminence above them; and by the stealthy and noiseless movements peculiar to the "red man," he succeeds in approaching near enough to dispatch his victim with an arrow, and send it tumbling down the rocks below. But if he fails in this, the alarmed animal will most naturally flee to the highest cliffs, and thus put himself more completely within the reach of his enemy. In this as in many other instances the wild natives evince a degree of scientific skill, which would do credit to an Audubon; but a want of union, discipline and habits of industry, prevent the advancement of the most useful sciences, which depend on systematic effort.

Curious Arts.

TO WASH IRON WITH TIN.—Small pieces of iron may be tinned, after being filed bright by washing them with a saturated solution of muriate of ammonia in water and by dipping them, while moist in a vessel of melted tin. If the iron is of such form as cannot be conveniently filed, it may be immersed in nitric acid, diluted with as much water as acid; when the acid begins to act sensibly on every part, it may be washed with water, and then with the muriate of ammonia, and if a little fine rosin be sprinkled on it previous to dipping it in the tin, it may be an advantage. The iron must remain in the tin till it becomes nearly as hot as the tin, otherwise it will be coated too thick. Muriatic acid may sometimes be used, instead of muriate of ammonia, and if the iron is not filed, it will answer a better purpose. The inside of cast iron vessels may be tinned as follows: Cleanse the iron by scouring or rubbing it with a sharp grained stone, keeping the iron wet with diluted nitric acid. As the most prominent parts of the iron will be first brightened by the stone, the acid will also commence its action on the same parts, which will very much facilitate the work, while the hollows, and deeper parts of the surface, will remain untouched till the iron is nearly smooth. When this is accomplished, wash the iron with water, and then with clear muriatic acid: turn the vessel over to drain off the superfluous acid: then set it upright, and fill it with melted tin, which must be cautiously poured, directly on the bottom of the vessel first, and the stream increased till the vessel is full; then pour out the tin suddenly, and invert the vessel till it is cold. Sheets of iron are tinned, in the manufactories of tin plate, by immersing the sheets, endwise, in a pot of melted tin, the top of which is covered with about two inches depth of tallow. This tallow answers a better purpose, after it has become brown by use, than it does at first. The only preparation of the iron sheets is, to scour them perfectly clean and bright.

TO GIVE WOOD A GOLD, SILVER, OR COPPER LUSTRE.---Grind about two ounces of white beach sand in a gill of water, in which half an ounce of gum Arabic has been dissolved, and brush over the work with it. When this is dry, the work may be rubbed over with a piece of gold, silver or copper, and will in a measure assume their respective colours and brilliancy. This work may be polished by a flint burnisher, but should not be varnished.

MORE BIG BONES.—The Madison Banner states on the most reliable authority, that a discovery has been made in Franklin County, Tenn., which is vastly more interesting than those of the great Mastadon, and Hydrargos combined. It consists of a complete human skeleton eighteen feet in length. the public are ready to suspect this to be either a hoax or a deception; that the bones are either *not found*, or are artificial: but it is gravely stated that they have been examined by the principal members of the medical faculty of Nashville, and pronounced unequivocally the skeleton of a man. The finder, it is stated, has been offered, but refused $8,000 for the bones. If the report is true we shall soon hear ample confirmation.

ASTOUNDING INTELLIGENCE.—We learn from the Providence Gazette, that it is announced in the Presbyterian "Churchman," that a certain clergyman has determined to "wear the *surplice* as well in the *pulpit* as at the *desk*"!! Of all things! What *will* become of religion, if a minister is allowed to preach in the same costume in which he prays, regardless of the relative honours of the surplice and the soul? So goes the world of mummery.

Interesting Experiments.

SYMPATHETIC INKS FOR SECRET CORRESPONDENCE.—*Process* 1---Dissolve muriate of ammonia in water, and write; the writing will be invisible. When you would make the writing appear, heat the paper by the fire, and the writing will become black.

Process 2.---Write with a solution of sulphate of iron---the writing will be invisible. Dip a feather in an infusion of nut-galls and with it wet the paper, and the writing will become black.

Process 3.---Write with a dilute infusion of galls, ---it will be invisible. Dip a feather in a solution of sulphate of iron, and moisten the paper with it, and the writing will become black.

Process 4.---Write with a solution of sub-carbonate of potass; wet this writing with a solution of sulphate of iron,---it will take a deep yellow colour.

Process 5.---Write with a solution of sulphate of copper,---no writing will be visible. Wash the paper with a solution of prussiate of potass,---the writing will then assume a reddish brown colour.

Process 6.---Write with a solution of super carbonate of soda; moisten the paper with a solution of sulphate of copper, and the writing will become green.

Process 7.---Write with a diluted nitrate of silver, and let the writing dry in the dark---it will be invisible; but expose the paper to the rays of the sun, and the writing will become black.

LUMINOUS INK THAT WILL SHINE IN THE DARK. To half an ounce of especial oil of cinnamon, in a phial, add half a drachm of phosphorus. Cork the phial slightly, and set it or suspend it near a fire, where the heat may be nearly equal to boiling; continue the heat four or five hours, shaking the phial frequently but cautiously lest any of the oil should thereby escape, or come in contact with atmospheric air, in which case it would take fire. The cork should be set sufficiently tight to exclude atmospheric air, but not so as to prevent the escape of any vapour that might be produced by excess of heat. The phial may be afterwards removed from the fire and suffered to cool. With this phosphorized oil, any letters may be written on paper, and if carried into a dark room, will appear very bright, resembling fire. The phial should be kept corked close, except when used.

TOO SMALL FOR THE PRICE.—It is reported by our agents that our paper is generally well received, and that the only objection is that "it is too small for the price." We can assure the stupid, senseless boobies who make this assertion, that we could afford the paper at one-half its present price, if we were to fill two pages with advertisements, and the balance with the ordinary newspaper material; but that, on the contrary, we have laboured twelve hours in examining sixty different papers, without being able to select sufficient material for two columns in this paper, and that some of our articles have cost us two or three days time in experimenting, to establish points and principles, and arrive at conclusive results. Yet we have known an old manufacturer to advise his workmen to subscribe for no high priced paper, when they could buy even larger papers for *a cent a piece.* We should be glad to instil a little common sense into the heads of such people, but as that cannot be done we must be content to furnish our paper to those who have more consideration than to suppose that the value of a paper is in proportion to its dimensions.

APOLOGY IN SEASON.—If our readers discover any errors, blunders or omissions in this number, they will please attribute them to the circumstance that *we are away*, and did not see the proof.

Illustrations of Chemistry.

(Continued from No. 4.)

CALORIC---is generally supposed to be a simple substance, comprising both light and heat, which are merely different properties or effects of the same fluid; but recent developments render it evident that light and heat, although nearly allied and generally combined, are distinct fluids, each acting under its own peculiar laws. Each of them is capable of important chemical influence and effects; but heat may be considered as one of the most important agents in all chemical operations and combinations. It pervades all bodies, ice and snow not excepted; and being very elastic, it expands and radiates in all directions, travelling with inconceivable velocity through vacuo, or through atmospheric air to a limited extent, and by a more moderate progress, it may be said to travel to an unlimited extent, seeking to diffuse itself throughout all nature with perfect uniformity. It has a tendency to expand all bodies into which it enters, and reduces metalic and other solid bodies to fluids, and liquid bodies to vapour, or the gaseous state. It cannot readily enter a highly polished metalic surface, but is reflected back in a manner similar to that of light by a mirror glass. The rays of heat from the sun, or from a fire, will travel swiftly through cold air, without in the least affecting the air through which it passes; yet the air will gradually become heated by contact with other heated bodies. Heat enters into the substantial composition of some bodies, and in a latent form becomes an ingredient in their composition, producing therein peculiar properties, which could not without its presence exist.

EXPERIMENTS.—Pour a little cold water on a lump of quick lime: the water will unite with the lime in a dry and solid form, while the heat which was therein held latent, will be rapidly evolved, so as to raise the temperature of the lime, above the boiling point, and sometimes even can produce fire.

To a gill by measure of sulphuric acid, add a gill of water;—they will so unite in a condensed form, as to occupy less space than when separate, and consequently a part of the latent heat of the water will be evolved, and the mixture will become too hot for the hands to bear.

Place a piece of ice in a jar or bottle of cold muriatic gas;—the gas will condense upon the ice, thus liberating its own latent heat to such an extent as to melt the ice almost instantly.

To a tea-spoonful of spirits of turpentine in a glass, add an equal quantity of a mixture of three parts of nitric with one of sulphuric acid;—by the condensation of this mixture a sufficient quantity of heat will be evolved to produce a sudden burst of flame.

Heat a piece of iron of one pound weight to a full red heat, and place it on a cake of ice of equal weight; the iron will be cold before the ice is melted; thus proving that more heat is required to raise the temperature of ice even one degree, than to heat an equal weight of iron to a red heat.

[To be continued.]

MAGNETISM BY ELECTRICITY.---A house was recently struck by lightning, in New Haven, and such was the influence of the electric fluid, that every article of iron or steel in the house, was subsequently found to possess strong magnetic properties. The attractive power of a razor-blade was sufficient to suspend a key weighing half an ounce. The magnetism appears to be permanent.

ENCOURAGING TO MECHANICS.—It is stated in an exchange paper that the Governor of Maine is a shipwright; the Governor of New Hampshire a wheelwright; and that the three highest offices in the gift of the State of Mississippi are held by a tailor a saddler, and a blacksmith.

VARIETY

The Providence Gazette of Thursday says, "The Manikins are to be dissected this evening." We do not know who the "Manikins" are, but are left to suppose them to be some family of itinerant singers.

The practice of imbuing the minds of the rising generation with the elements of aristocracy, is called the "science of *Haughty culture*," or the art of refining pumpkins.

The officers of the French ship Venus, estimated the height of a wave which once struck that vessel, at 246 feet. The space between the waves was nearly 500 feet.

The bronze equestrian statue of General Jackson, the erection of which is contemplated by the citizens of Nashville, is estimated to cost $3000. The height is to be 18 feet.

Is the word *granddaughter* thus properly spelt? or is one *d*, as in grandaughter, sufficient? Please some body answer, and without consulting the dictionary on the subject.

An old soldier in the British army, has recently declared that he had never heard of the defeat of the British at New Orleans. This shows the general ignorance of the British soldiery.

Seventy thousand children, under sixteen years of age, are employed in the various manufactories in France. None are allowed to work under eight years of age.

The Philadelphia papers speak of a gentleman, now residing in Washington, who is seven feet high and weighs 308 pounds. Why don't he exhibit himself for a giant?

The water-power of the Miami Canal is estimated to be sufficient to turn 7,812 mill-stones, being twenty times the power supplied by the Merrimack at Lowell.

The Globe says—"An improved fire engine has lately been *discovered* in this city." It must be one of those that got lost in the mud in Broadway last spring.

It is stated that a certain man in Portsmouth, O., has drunk 91,980 glasses of rum within the last sixty years, and is not dead yet. Either the man or the story must be a *tough* one.

A young English lady, in declining a match, gave thirteen objections; twelve of which were the suitor's twelve children; and the thirteenth was the *suitor himself.*

The enterprising citizens of Pittsburg, are determined to have a railroad from the Atlantic to the Ohio; and they will do it: for the enterprise of Pittsburg is unrivalled.

A circular from the General Post Office states that any writing on the margin or wrapper of a newspaper subjects the same to letter postage,—10 or 20 cents per ounce, according to distance.

The professional *devil* of the Niles Republican, speaking of editing, says—"We are satisfied we can play *shinny* or *cricket* to much better advantage than we can edit the Republican."

Electricity is now applied advantageously in the manufacture of iron and steel. The utility of this wonderful and powerful agent, is being rapidly developed.

The number of commitments at the City Prison in New York has lately increased from an average of 140 to nearly 260 per day;—frequently more than the prison will accommodate.

The Massachusetts Ploughman shows up the folly of the Western Railroad Company, in keeping up the fare to $6, while the fare from Boston to Albany by way of New York is only $3.

The Maine Farmer speaks of an *elegant* plough. Such a thing may be, but of all things a plough is about the last subject to which we should think of looking for elegance.

The first trip of the Oregon from New York to Providence, was made in 10 1-2 hours,—something over 20 miles per hour—with 800 passengers.

The number of houses built in Boston last year was 1,625—in New York 2,213—in Philadelphia 1,512—in Cincinnati 1,228.

The Marquis of Salisbury has purchased the island of Rum, for the sum of £24,000, for a park and a shooting ground. So much for the love of sport.

The water of the Salina Springs is so strong that a bushel of salt is produced from 45 gallons of the water. This is six times stronger than sea-water.

The steamer Great Western arrived last week about the time our paper went to press. She brought a large freight, but no news of importance.

In 1775 arrangements were made for carrying the mail from Philadelphia to Boston four times a month instead of twice a month, as formerly.

One hundred and two cars, drawn by a single locomotive, passed over the railroad bridge, at the Falls of the Schuylkill, one morning last week.

The New Orleans Courier announces the discovery of another important improvement in Morse's telegraph. Its peculiarities are not fully described.

A Baltimore jury has decided that a railroad company is not responsible for cattle which are killed or injured on railroads by the locomotive.

The editor of the Morning Star has announced his intention of becoming a parson, if he lives long enough. We should like to see him do it.

The population of the city of Providence is ascertained by a new census to be 31,751; showing an increase of 5,579 within five years.

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The Labourer.

BY WM. D. GALLAGHER.

Stand up—erect! Thou hast the form
And likeness of thy God!—who more?
A soul as dauntless 'amid the storm
Of daily life, a heart as warm
And pure, as breast e'er wore.

What then?—Thou art as true a MAN
As moves the human mass along,
As much a part of the Great Plan
That with Creation's dawn began,
As any of the throng.

Who is thine enemy?—the high
In station, or in wealth the chief?
The great, who coldly pass thee by,
With proud step and averted eye?
Nay! nurse not such belief.

If true unto thyself thou wast,
What were the proud one's scorn to thee?
A feather, which thou mightest cast
Aside, as idle as the blast
The light leaf from the tree.

No:—uncurb'd passions—low desires—
Absence of noble self-respect—
Death, in the breast's consuming fires,
To that high nature which aspires
Forever, till thus checked.

These are thine enemies—thy worst:
They chain thee to thy lowly lot—
Thy labour and thy life accurst.
Oh, 'stand erect! and from them burst!
And longer suffer not!

Thou art thyself thine enemy!
The great!—what better they than thou?
As theirs, is not thy will as free?
As God with equal favors thee
Neglected to endow.

True, wealth thou hast not; 'tis but dust;
Nor place: uncertain as the wind!
But that thou hast, which, with thy crust
And water, may despise the lust
Of both—a noble mind.

With this, and passions under ban,
True faith, and holy trust in God,
Thou art the peer of any man.
Look up, then—that thy little span
Of life may well be trod!

Our Country.

BY W. J. PABODIE.

Our country!—'tis a glorious land—
With broad arms stretched from shore to shore,
The proud Pacific chafes her strand,
She hears the dark Atlantic roar;
And nurtured on her ample breast,
How many a goodly prospect lies
In Nature's wildest grandeur drest,
Enamelled with her loveliest dyes.

Rich prairies, deck'd with flowers of gold
Like sunlit oceans roll afar;
Broad lakes her azure heavens behold,
Reflecting clear each trembling star,
And mighty rivers, mountain-born,
Go weeping onward, dark and deep,
Through forests where the bounding fawn
Beneath their sheltering branches leap.

And cradled 'mid her clustering-hills,
Sweet vales in dreamlike beauty hide,
Where love the air with music fills,
And calm content and peace abide;
For plenty here her fullness pours,
In rich profusion o'er the land,
And, sent to seize her generous stores,
There prowls no tyrant's hireling band.

THE ARCTIC EXPEDITION.—A letter received from Captain Franklin's squadron, on the east coast of Greenland, and dated July 11th, says: "We have the sun all the twenty-four hours, and the middle of the day is really very warm, notwithstanding that from the top you can count a thousand ice-berges." There seems to be something *bullish* in this letter, in speaking of the middle of the day, where the day is continuous, and especially in his statement that the letter was written by the light of the "*midnight sun.*"

SIXTY YEARS AGO.—The Portsmouth Journal says, the mail between Boston and Portsmouth, N. H., was carried on horseback, by Deacon John Noble, in a tin box, four inches wide and ten inches long. He usually left Portsmouth on Monday morning, and arrived in Boston on Tuesday night; remained in Boston till Friday morning, and then returned to Portsmouth, where he arrived on Saturday night. Now the mail passes between these places three times a day, and the papers and letters carried in it, amount to twenty or thirty bushels a week.

PROPRIETY.--Speaking of the execution of Greene at Troy last week, one of the city papers says—"Every thing was conducted with order and *propriety.* We never could see much propriety in hanging a live man up by the neck, when there are so many more convenient modes of killing him.

PLAIN BUT HONEST.—Mr. Webster, in closing an argument recently in Bristol County, Mass., declared that "if the rule of common sense was not to govern Courts in their deliberations, they might be looked upon as *nuisances*, rather than the exponents of justice."

The Art of Painting.

(Continued from No. 4.)

PLAIN PAINTING IN OIL COLOURS.—The beauty of this kind of painting depends principally on the uniformity and smoothness of its finish; and this is effected by distributing the paint equally on every part of the work, and finishing by drawing the brush lightly and steadily over the work, in the direction of the grain of the wood. Care is required to avoid leaving a superfluous quantity of paint in the quirls and corners; all such accumulation must be brushed out. In painting houses outside, the workman should be particularly careful to paint the edges of the clapboards and all the hollow corners; and for this purpose, the brush must be held with the handle inclining downward, that the brush part may work upward, filling the edges and corners. Paint, for inside work, usually requires an ingredient more drying than raw linseed oil; and for this purpose, an article called litharge, being finely ground, is added to the paint, in the proportion of one ounce to each pound of paint;—more or less, according to circumstances. This litharge is evidently the best dryer for floor paint that is known; paints tempered with this, dry harder, and wear better, than any other: but painters have in general use a fluid article, called *drying japan*, which is very convenient as a dryer, and is excellent for carriage and ornamental work, but is in more general use than it should be, in house painting. This japan consists of oil, gum shellac, litharge, and red lead, united by being boiled together. Red lead is, of itself, a good dryer, in such colours as are not injured by its use; but when a delicate white is required, a sulphate of zinc, known as *white vitriol*, must be used. It is a general custom with painters, however, to prepare a thin oil, by boiling it, that it may the more readily dry, even without any other dryer. The usual mode of boiling the oil, is to place several gallons in an iron kettle over a slow fire, and when it begins to boil, add four ounces of litharge and an equal quantity of red lead, to each gallon of oil: the oil is continued boiling, being almost constantly stirred about with a stick, for about half an hour, or until it boils clear, without frothing; it is then taken off to cool. This oil can be always procured ready boiled, at the paint shops; but paints mixed with this, will not prove so durable when exposed to the weather or to wear, as those ground in raw oil, and having good opportunity to dry. Raw oil, with litharge for a dryer, is best for floors or other inside work, in warm, dry weather. In giving the work a second or third coat, however, it is requisite to mix spirits of turpentine with the oil, to prevent too sharp a gloss, and render the paint more firm and hard. The paint is first mixed with oil, and the spirits of turpentine is added, in the proportion of a pint to two quarts of oil; the proportion varying, however, according to circumstances. If the paint is required to be left *flat*, or without any gloss, the spirits may be used in the proportion of one half, or even two to one: but such paint will not wear so well. Alchohol is sometimes used instead of spirits of turpentine; but neither of these should be used in any considerable quantity in outside work or warm weather: in cold weather they are convenient to make the paint flow more freely. As a general rule, after the first coat of paint is dry, and when the second is to be applied, the work must be examined, and all the cracks, seams, and holes, filled up smoothly with putty, (a simple mixture of oil and Spanish whiting,) and all the rough parts smoothed with sand-paper or glass-paper: and after smoothing, the dust must be carefully removed with a dry brush. A general but improper custom which prevails with most painters, is to apply the putty with the fingers merely, in filling the cavities of nails and brads; but instead of this, the putty should be always smoothed with a chisel-shaped piece of wood. When any uneven parts of the surface is to be smoothed, the putty should have a little white lead paint mixed with it, to make it adhere better. If an old room is to be painted, such parts of the surface as have been discoloured with smoke, or have been exposed to wear, should be washed over with a dilute mixture of lime and water, and allowed to dry before the paint is applied: and such parts of a floor as have become bare, or from which the paint is worn off, should be first painted with very thin or dilute paint, and become dry before the whole is painted: as the same paint cannot be suitable for the painted and the unpainted parts. We shall next proceed to instructions in producing and compounding various colours.

COLOURS.—There are but three primary colours;—red, yellow and blue. Blue and red combined, constitute purple. Blue and yellow combined, constitute all the variety of greens. Yellow and red combined constitute the average colour. Red, qualified by yellow and white, constitute scarlet. Olive colour is produced by mixing blue, red and yellow. Lilac and violet are produced by red and blue in different proportions. White is composed of all the different colours united, and black is the absence of all colour. When red, yellow and blue are perfect, and perfectly blended, the compound proves white. (This is proved by the appearance of a wheel, which being painted with the three colours, is put in rapid motion, so as to blend apparently the colours: the more perfect the colours the more perfect the white.) Black is uniformly produced by fire, which, is a powerful destroyer of all colours.

New Inventions.

A PRAIRIE STEAM-CAR.—A gentleman in Alton Ill. is constructing a car to be propelled by steam power on the prairies, independent of railways. The size of the car is 15 by 20 feet; and in the place of wheels, he will use cylinders, four feet long and six feet in diameter. It is thought that by running this car a few times over the ground, the track will become smooth and hard, so that he may carry forty or fifty tons on a load, and travel ten miles per hour. We have long advocated the practicability of running carriages on the prairies without railroads. We shall write for further intelligence on the subject.

Ærial Navigation.

The article on this subject in our last number would naturally tend to produce enquiry in the minds of many with regard to particular modes of management under various circumstances, admitting the practicability of elevation and propulsion of the ærial ship: we shall therefore proceed with explanations on this subject, prior to presenting mathematical demonstrations on the subject of velocity. Supposing, then, the balloon to be constructed and inflated with hydrogen, it must be held with a strong rope, made fast to some permanent object fixed in the earth, to prevent its going adrift and flying away. For this purpose we shall use a stout iron spiral rod, in the form of a cork-screw, with a hand-spike attached, whereby two men may screw it into the earth to a sufficient depth to be permanent, answering the purpose of an anchor. But that the draught on the halser may not be too strong, the saloon-car will be supplied with a quantity of stone-ballast, nearly equal in weight to the buoyant force. The saloon will have a long double door in the floor thereof, from which a receiving-car will descend occasionally to the ground. This car is to be surrounded with railing and seats; being about ten feet in length by five in breadth, and suspended from the saloon by four ropes, connected to a windlass at the top. This windlass is to be connected occasionally to the steam-engine, so that the passengers will be elevated to the saloon by steam-power; but a wheel is mounted on one end of the windlass, and from its periphery a small rope descends to the car, so that by means of this, a single person may ascend or descend by their own management of this wheel-rope. When passengers or freight are received, an equal weight of the ballast is deposited; and whenever passengers are landed, an equal weight of stone or earth must be taken on board. For the purpose of ascertaing the weight, the four corner ropes will be connected to the receiving-car by four spiral springs, with indices, which will at all times indicate the weight of whatever the car contains. When the balloon is moored, it will invariably head to the wind; and when ready for moving, the engine is put in gentle motion, sufficient to propel the balloon forward to a point directly over the anchor-screw, when a man below will detatch the screw from the earth, and it is hauled up, (and the man with it, if he belongs on board,) while the balloon moves ahead. The balloon will not ascend more than four or five hundred feet from the earth, unless it be to secure a more favourable atmospheric current, which will not often occur. We have already explained (see No. 4) the method of steering the balloon, both with regard to its horizontal and vertical directions: if it is required to ascend or descend gradually when under head-way, or turned to the right or left, it is done by means of the *vertico-horizontal rudder.* But when it is required to descend to a point, the volume of the gas is compressed by means of the interior rigging of the balloon; the longitudinal rods being drawn towards the centre, so as to cause the balloon to descend sufficiently rapid. In whatever direction the wind may blow, it will be to the passengers apparently ahead: for though the wind was blowing a gale in the direction of the course of the balloon, yet the latter will move so much the faster, and the wind will still appear to be ahead. If the balloon should encounter a severe gale, directly ahead,—a gale sufficient to prostrate trees and unroof houses,—it will descend perpendicularly (still heading the wind and having the wheels in motion) to within a few feet of the earth, and grappling irons or a small anchor will be thrown out, and will take to the trees or bushes, or to the earth; or a man may descend and make fast an anchor-screw. If the compressing apparatus should fail to operate, a part of the gas may be readily liberated by a valve for the purpose. And on the other hand, if at any time the balloon should fail to ascend sufficiently rapid, a part of the ballast may be thrown over. The saloon will be furnished with water-tight tanks, arranged under the seats, on the life-boat principle, so as to be safe, if any accident should occasion a descent into the water. And in case of the worst imaginable immergency,—that of the balloon taking fire,—the saloon itself will descend gently to the water; and if over land, each passenger will have a parachute at hand, by which they can descend safely to land. (To be continued.)

Late Foreign News.

The Royal Mail steam-ship Britannia arrived at Boston on Friday last, with 101 passengers, among whom were Hon. Edward Everett, his lady and daughter. The news by this arrival is generally favourable, but not important. A terrific whirlwind or tornado had occurred in France and Germany, destroying many houses. Sixty persons are reported to have been killed by falling buildings, and one hundred and twenty wounded.—The Russian army is said to have gained some small advantage over the Circassian; and the French at Algiers had again defeated the Arabians: but neither movement is considered important.—The wolves had become troublesome in France; two hundred sheep in one fold had been destroyed in one night.—A drought prevailed at Constantinople to such an extent that water was sold in small measures in the streets.—Queen Victoria is travelling in Germany, and frolicking with the children.—The latest news from China gives account of a destructive conflagration of a theatre, in Canton, by which twelve hundred and fifty-seven lives were destroyed, including fifty-two actors and actresses, and 2,100 more were wounded. On the day after the fire, thirty persons were killed by the falling of the walls.

WONDRRFUL SPRING.—One of the State boundary Commissioners of Missouri describes a remarkable spring about 50 miles from Bateville. The spring rises in a basin about 500 feet in diameter, and discharges from twenty to thirty thousand gallons per minute at all seasons. The spring has been sounded to the depth of 500 feet, but as yet no bottom can be found.

POSTMASTERS and others to whom this paper may be sent, are respectfully solicited to exhibit the same to others, that its patronage may be thus extended.

Mammoth Cave.

(Continued from No. 3.)

The ceiling is about seventy feet from the floor and is perfectly black, but gemmed with crystals, that, reflecting the torch-light, have the appearance of stars, while the back ground in which they are set, appears like the dark sky of night. The walls are white limestone, and slope gradually until they meet the ceiling, thus looking like overhanging precipices, while the loose rocks, lying confusedly in the bottom of the cave, give the appearance of the bed of some mountain stream, whose waters are dried. Look upwards, and you can see between the ragged precipices, the dark sky, gemmed with a myriad of stars, and calm and beautiful as it is of a summer's eve. The illusion is *perfect;* and this one dash of the pencil of nature challenges the imitation of human art. The imagination of a Raphael would drop, pinionless, in the attempt to soar to such daring sublimity of design, and his pencil would fall from his hand, its magic gone, in the execution! We remained here some time wrapt in admiration of this beautiful exhibition of nature's painting; then, reluctantly leaving the spot, we turned from the main cave into the "Deserted Chambers." The first of these, is called the "Wooden Bowl," from its shape. In it is a clear spring from which we drank. We then passed through the "Archway," a narrow passage, to "Side-saddle Pit," sixty-five feet deep. Near this, is the "Bottomless pit," which we crossed on a wooden bridge. This pit is so called from its great depth, which is between three and four hundred feet. Leaving the main cave again, at this point we reached "Gordon's Dome" after ascending and descending one or two ladders. This is considered the "grandest" thing in the cave, being a perpendicular shaft measuring three hundred feet from top to bottom. Its walls are decorated with beautiful formations of crystalized limestone, reflecting the powerful light with an intensity which renders it almost painful to look upon them. Human architecture could not produce as a monument of its own perfection any work that could compare with this splendid dome,—so majestic in its proportions, and so perfect and exquisite in the ornaments which decorate its walls. I remember the expression of an Englishman, who on seeing it, said that the sight of it alone, repaid him for his voyage across the broad Atlantic.

Returning to the main cave, we passed through the "Humble Shoot," the "Winding Way," the "River Hall," and "Bacon's Chamber," to the "Dead Sea," quite a large body of water, and very deep. Passing along the side of this, we then crossed the river "Styx" by a passage through an upper cave above. We then crossed "Lake Lethe" in a boat, but little better or larger than the bowl in which the "three wise men of Gotham" went to sea. Then climbing over a pile of rocks and sand, we embarked in another boat, scarcely larger than the first, and descended the river "Jordan," the distance of three fourths of a mile. We thus found ourselves, after navigating one mile under ground, on the other side of "Purgatory," (which we passed unscathed,) cut off from the rest of the world by the oblivious waters of Lethe, the ferriage of the Styx, the sea of the Dead, and last of all, by "Jordan's ever-rolling flood."

Our guide sang several songs while crossing, to show the effect of the echo upon the music, which softened the trembling sounds and repeated them over and over, as they died away, rolling from cavern to cavern;—or rather, it seemed as if so many spirits, who were concealed in the impenetrable darkness of those subterranean avenues, took up the song by turns, and sung it over, but each one upon a lower key, and with a softer voice.

Landing in "Silliman's Avenue," we again pursued our route, over heaps of rock until we reached "Cascade Hall," in which is a cascade falling down one of its sides. A short distance beyond, we entered the "Milky Way Side cut," that takes its name from the incrustations on the ceiling, giving it an appearance, similar to that of the Milky Way. We pursued this branch until we entered "Shelby's Avenue," in which are large beds of fibrous gypsum upon the bottom and sides, five or six feet in depth. These, at first sight, look like snow banks. At the end of Shelby's Avenue we turned a point or angle, formed by a ledge of rock, twenty feet high, resembling the stem and hull of a ship. The model is almost perfect. It is called the "Great Western." We here entered the "Pass of Algore," two miles in length, having traversed which, we came to "Corrinna's Dome,"—one of the most beautiful apartments in the cave. It is circular, its height being twenty feet, and is entirely composed of crystalized limestone, and fibrous crystalized gypsum. After passing into "Boon's Avenue," and thence into the "Spring Side Cut," where is "Hebe's Spring," (a fountain strongly impregnated with sulphur,) we entered "Cleveland's Cabinet," the distance of nine miles from the mouth of the cave. This cabinet is about three miles in length, and abounds in crystalizations of various kinds. Upon the floor, in several places, are huge heaps of sulphate of magnesia (Glauber's Salts) and sulphate of soda, (Epsom Salts,) which are said to be more powerful than those sold at the Apothecaries. Near the entrance of Cleveland's Cabinet, is "Mary's Vineyard," so called from the beautiful circular crystals of limestone, hanging in clusters from the rock, and exactly resembling grapes. These "grapes" cover the wall for some distance, giving the appearance of a thriving vineyard. "Spar Hall," through which we next passed, is so designated from the numerous formations of spar found in it. Next to this is the "Snow ball room," the ceiling of which is covered with formations of sulphate of lime, which resembles snow balls. In the remote end of this chamber is "Mary's Bower," a small dome, with a fretted ceiling of *rosettes* of gypsum formation. These rosettes are as natural as if sculptured from marble, in imitation of the natural rose. There are several grottos in this portion of the cave, whose walls are covered with innumerable formations of gypsum.

[To be Continued.]

The Great Commandment.

The first and greatest commandment—"Thou shalt love the Lord thy God with all thy heart, with all thy soul, with all thy strength, and all thy mind," may be truly considered as the greatest and most important and precious promise that is recorded in the Old Testament. The Jews considered it to be a mere command, and evading its simple, plain and pointed import, construed it in a manner to suit their capacity and convenience: and many pretended to observe and obey it, who probably never experienced the least sentiment of pure, sincere love and adoration towards that Being who had so repeatedly evinced his love to them. Not finding in their hearts that sublime and holy affection which was intended, as expressed in the commandment, they, like a great majority of professors among us, construed it to mean merely the attentive observance of all those ceremonies, hospitalities, and acts of common honesty, which were specified in the Mosaic laws. But very few of them were aware, that this great command was calculated to convince them, (through their inability to comply therewith,) of the depravity of their hearts, and their need of the divine and special influences of the Spirit of God, to enable them to lo e him in reality. Reason itself shows perfectly plain that the great Author of nature is more lovely and more worthy of pure and ardent love, than any thing or all things that are created. Nevertheless, the human heart, as every man can testify, is incapable of exercising that rational, fervent love to God, without the special aid of Him who gave the commandment: and many have probably concluded that it is wholly impossible, and vain, to hope or expect that man should ever be able to love God according to the full import of this great command. Nevertheless, it has been happily proved, by the experience of many, that this command, "Thou shalt love," &c., is, and was evidently intended as a most precious promise, and is more fully expressive of the immense joy and happiness which is prepared for the faithful and obedient saints, than can be found comprised in any one sentence in the sacred writings. Let an experienced Christian, or even a penitent sinner, read this as a promise, "Thou shalt love the Lord thy God," &c., and he will find it to contribute much joy and consolation;—an assurance of the very consummation, which of all things he most desires, and which is only needed to make him perfectly happy forever.

An attractive Speculation.

It is usual with those who would induce others to engage in any special enterprise, to present a statement of facts—or what purports to be such,—explanatory of the circumstances, the advantages to be gained, and the requisites for securing them. In accordance with this custom, we shall give a plain statement of the circumstances, in as brief and concise form, as the nature and importance of the subject will admit.

A nobleman, several years ago, purchased an immense estate, and made arrangements for the construction of many splendid palaces, gardens, and arbours, with beautiful groves, vines and lakes, far superior to any thing hitherto known on the earth.—While this work was progressing, the proprietor retired from the country, promising to return at about the time that these elegant works should be completed. He left a proposition in writing, and which has recently been extensively published, in which he generously offers a permanent and perpetual inheritance and joint possession of this beautiful and excellent estate, to every person who will accept of it, and make due arrangements to enter on the possession of this new inheritance, as soon as the proprietor returns. He has, moreover, given a solemn pledge, that he will see that all those who accept of his invitation, shall ever after be well provided for and made happy in all things; and has left abundant and substantial evidence of his sincerity and of the genuineness of his proposition, which he invites all people to examine for themselves. He merely requires that those who are disposed to accept of his generous offer, should disencumber themselves of all things which are vain and useless, and manifest confidence in the integrity of the donor, by marching towards the new inheritance, to meet him on his return. This liberal proposition is to extend only to the time of the proprietor's return; and will be withdrawn forever from all but those who may be found prepared to enter on the possession immediately on his return, which is looked for daily till he comes.

SCIENTIFIC.—A correspondent of the New York Farmer and Mechanic, describes an experiment made with the Steam Electrical Machine, in which a wooden ball is held suspended by a jet of steam, even when the jet is made to vary several degrees from a perpendicular; and enquires if any of the readers of the F. & M. will tell why the ball does not fall. Being a constant reader of that paper, we shall venture to answer in our own columns. When the jet of steam leaves the pipe, its expansive force expands the column notwithstanding the tendency of inertia to confine the steam to its original direction: these two forces counteracting each other, very naturally compress the steam more at the surface of the column than in its centre. The ball then occupying this partial vacuum in the centre of the jet or column, being subject to the action of gravity, naturally seeks and retains the position which is least exposed to any influence in opposition to the force of gravity; and its descent being prevented by the force of the more compressed steam below, it remains in equilibrium. Is that clear?

The American Board of Commissioners of Foreign Missions have *unanimously* adopted a report, the import of which is, that it is the business of the institution to *save souls*, rather than oppose sin.

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Most numerous are the inventions lost to the world for ages, and many doubtless to this day, because the inventors, being poor, could not bring them out. To remedy this evil to some extent, the following plan is suggested.

RARE PROJECT.

G PECK & CO. having, and being offered, several new inventions, worthy to be tested and brought out, present to the public the following liberal offers.

One invention promises great usefulness to most cities, villages, and farmers; one, great aid to agriculture. One, greater safety and cheapness to rail-road conveyance; one a great saving of expense, time and toil in education, &c.

They require means to bring them into use. If many will furnish each a little the burden will be light—the success almost certain, and the advantage the greater; and this advantage the inventors will gladly share with the helpers. Incurring much expense, and risking much themselves, it cannot be presuming too much to trust that an intelligent public will see it to be liberal, and wise to risk a little and invest the small sum proposed on the terms here offered.

It is little any can lose if he were to get no return, while we must lose far more, even for advertising, if none accept our offers. But they will have some return, and may much gain. Let then each send us his name and $2, or 25 cents weekly for ten weeks, and secure the advantages of these inventions.

We add one other consideration. Had Fitch, who first applied steam to propel a boat, and was the real first inventor of steam boats, received a little aid, steam boats would have been in operation more than 50 years ago, and our country would have had the undisputed honor of the invention. But he exhausted his means—none would help—and though he knew it was worth millions, he died in poverty, and our country was the loser for a half century.

WORTHY ATTENTION.

A share or town right of a valuable patent—50 or 100 acres of good farming land; $2, $30, or $85 cash; a copy of the circular interest tables, or a useful Essay, to be had on easy terms.

The patent share will be sent to any one who sends us $2, or 25 cents weekly for ten weeks, which share will be worth $5 or more.

The town right will be his who procures 25 share subscribers and sends us the money. The 50 acres his who sends us the money for 150 subscribers within three months. The 100 acres his who sends us for 300 in four months. The $2 his who sends us the $2 each for 12 subscribers in 2 months. $30 his who sends for 160 in 3 months, $85 his who sends for 250 in 6 months. The interest tables or Essay shall be his who sends us immediately the names of each waggon, carriage, plough or harness maker, of each farmer who keeps bees or silk worms, of owners of furnaces or forges, of each physician, minister, teacher, miller, tanner and merchant of the village or town where he lives, twenty-five names or more; and also a share of the patent right if he sends 25 or more names and 25 cents cash within one month.

The patent share to each of those who pay $2 within 8 weeks from next September 1, or before, will embrace three inventions; to those who pay in the next 5 weeks, two inventions; and but one to others, and not this unless cash is received in 4 months, unless we choose. The essay or tables will also be his who pays before September 20th. What we desire is speedy work—hence these large premiums. Most important inventions will thus be secured, and a profitable share to each.

We also offer to any one who will send us $10, $30, $75 or $125, to give him 3, 9, 27 or 54 shares one-third in each of three inventions, or a town right of one, two or three of the patents, and a privilege to sell rights, at great profit; and he may commence at once. We can give good business of this kind now. If our project meets with the favor we expect we shall be able to give a great deal of business of this kind, and thus greatly promote enterprize and industry. We have the best machine to clean wheat of smut, garlic, &c.; price $75. Over 70 have been put in operation in one county in Pennsylvania. We have also the best cultivator for tilling corn and putting in wheat and rye, from $6 to $15. Also the neatest, handiest and swiftest straw cutter of its size, for $12. Office for orders at room 13, 25 Pine street, next to the Custom House.

The inventions will be of different values, and will be put into such number of shares as will make each share worth $5 or more. We will dispose of the rights, keep the accounts, and pay to share holders the dividends. We shall also from time to time, quarterly or oftener, send them a paper giving them a full account of the inventions, as far as it will be best to publish it. We shall send them the first in September. Let it announce that subscribers are already in to secure the whole project. It will not fail if no more subscribe than we already have. We can do a little, and each who helps will aid us to do more; thus none will lose, but if many help, the better will it be to each. One of the most promising inventions will be very costly to start. We want 10,000 subscribers for it: but it will be worth ten times the cost; and it is certain of success, it has been so far tested. The others are very excellent in promise.

The inventions are very important; the land good in this State or in Pennsylvania; the Tables useful, and the Essay on a subject of deep interest to all; and the periodical we shall occasionally send, free of charge, will be of general interest to farmers, mechanics, patentees, physicians, ministers, and owners of minerals, and to all.

It is thus the interest of all to push this project. Let then each improve this offer at once, and have the satisfaction of aiding to bring out great inventions that promise vast benefit to mankind, and good profit to the helpers, as well as timely aid to some worthy inventors, who are struggling with poverty, whom we greatly desire to aid. Now is the WORD! Now or never. If QUICKLY done, it will be DONE and WELL done, and a GOOD THING done.

It will be easy for two or more to unite, write their names in a letter, put in the money, and direct to G. Peck & Co., New York. The mail will bring it safe, or we will risk it, and pay the postage.

New York, August, 1845. G. PECK & CO.

Editors who will notice this rare project and advertise it, will promote a great public good, and shall share liberally in the advantage they promote. For 13 insertions of the project in full, they shall receive 5 of the three right shares.

Besides the guarantee, which the expense we have already incurred for patents, models, machines, advertising, &c. to make these proposals, gives, to warrant confidence at least to the little extent we ask, we are favored with the following certificate, signed by Hon. R. H. Morris, late mayor and present post-master, and by Hon. F. A. Tallmadge, the present recorder of New York:—

"Messrs. G. Peck & Co. wishing the public to favor their business, this certifies, that, from our personal acquaintance we are assured that confidence in their proposals will not be misplaced.

ROBT. H. MORRIS,
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N. B.—We have one invention, well tested, worth $100,000, the profits of which from this State or Massachusetts will be three times that sum in the next five years. It needs a capital of $25,000. A half can be had for this sum, one half as capital, and an equal sum to be paid out of the half of the first avails.

☞ All our travelling and city agents will have receipts to give, signed by us. Postmasters, Editors, and others, acting as local agents, in towns and villages where they are known, will give their own receipts, which will be duly acknowledged by G. Peck & Co.

au22

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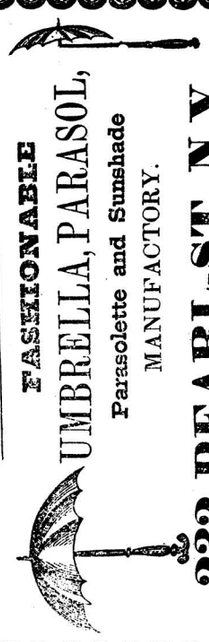

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CUMMINGTON QUINEBAUG
SCYTHE STONES,
From the Celebrated Robbins Ledge.
MANUFACTURED BY J. S. STAFFORD & CO.,
CUMMINGTON, MASS.

THE unprecedented sale of the *Cummington Quinebaug SCYTHE STONES,* during two years, has fully established their claim to *SUPERIORITY OVER ALL OTHER STONES* now in use, and renders unnecessary any recommendation from the proprietors.

☞ A continuance of public patronage is respectfully solicited. All orders addressed to *J. S. STAFFORD,* or *JACOB MORSE,* (sole proprietors) or *STEPHEN MORSE, Agent, Cummington, Mass.,* will meet with prompt attention.

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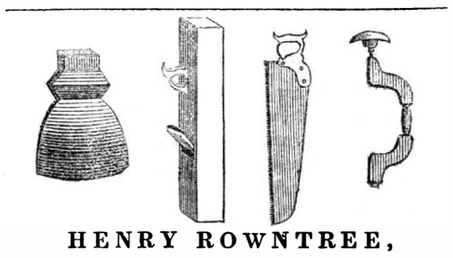

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